

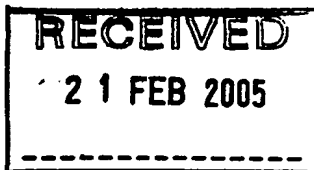
PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

To:

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NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing
(day/month/year)

18.02.2005

Applicant's or agent's file reference
PSD/42360PCT1

IMPORTANT NOTIFICATION

International application No.
PCT/EP 02/12985

International filing date (day/month/year)
20.11.2002

Priority date (day/month/year)
20.11.2002

Applicant
NOKIA CORPORATION et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international
preliminary examining authority:



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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PSD/42360PCT1	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 02/12985	International filing date (<i>day/month/year</i>) 20.11.2002	Priority date (<i>day/month/year</i>) 20.11.2002
International Patent Classification (IPC) or both national classification and IPC H01Q1/24		
Applicant NOKIA CORPORATION et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

I ☒ Basis of the opinion

II ☐ Priority

III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability



IV ☐ Lack of unity of invention

V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

VI ☐ Certain documents cited

VII ☐ Certain defects in the international application

VIII ☐ Certain observations on the international application

Date of submission of the demand 09.06.2004	Date of completion of this report 18.02.2005
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Jäschke, H Telephone No. +49 89 2399-7139 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP 02/12985

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-11 as originally filed

Claims, Numbers

1-12 received on 14.12.2004 with letter of 08.12.2004

Drawings, Sheets

1-8 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☒ the claims, Nos.: 13,14
- ☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/EP 02/12985**

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-12
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-12
Industrial applicability (IA)	Yes: Claims	1-12
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Reference is made to the following documents:

D4: PATENT ABSTRACTS OF JAPAN vol. 1999, no. 08, 30 June 1999 (1999-06-30) & JP 11 068456 A
D7: WO 02/078124 A1
D8: EP 0 869 579 A1

2. The present application does not meet the criterium as to inventive step of Article 33(1) PCT, because the subject-matter of claims 1-12 does not involve an inventive step in the sense of Article 33(3) PCT.

- 2.1 Document D7 is regarded as being the prior art closest to the subject-matter of claim 1, and discloses:

*An antenna arrangement including (D7, abstract; Fig. 1, feature CP1):
an antenna element (D7, abstract; Fig. 1, feature CP1);
a load element (D7, abstract; Fig. 1, feature CP2) capacitively coupled (D7, page 7, lines 24, 25) to the antenna element; and a frequency adjusting arrangement (D7, abstract) for tuning the antenna element (D7, page 10, lines 9-18; Fig. 6 vs. Fig. 7), the frequency adjusting arrangement comprises a switch arranged to connect one of one or more impedance adjusting elements to the load element (D7, page 9, lines 1-10; Fig. 5).*

- 2.1.1 Although CP2 in D7 provides an additional resonance frequency it acts as a load for the antenna element CP1. In Fig. 6 in D7 the three resonance frequencies of the antenna arrangement are shown for the switch being "on", whereas in Fig. 7 the three resonance frequencies of the same arrangement are shown for the switch being "off" (page 11, lines 8-12). The lowest frequency appears not to be affected by the position of the switch (page 11, lines 16, 17) whereas both higher frequencies are shifted to lower frequencies (page 11, lines 17-20 with Fig. 6, 7) by switching the switch "off". In D7, Fig. 6 the two higher resonance frequencies are about 1.92GHz and 2.12GHz whereas in Fig. 7 they are about 1.74GHz and 1.87GHz. The switching affects the resonance frequency of HB1 of the antenna element CP1 and thus tunes it.

- 2.2 The subject-matter of claim 1 therefore differs from the matter known from D7 in that: The impedance adjusting elements are *strip or microstrip lines* instead of discrete reactances.
- 2.3 The problem to be solved by the present invention may therefore be regarded as providing an alternative impedance adjusting element.
- 2.4 The solution proposed in claim 1 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) for the following reasons:
In D7, on page 9 it is explicitly mentioned that "other elements can be provided as required to produce the necessary reactance values". Thus the person skilled in the art would readily chose other commonplace elements like strip or microstrip lines as impedance adjusting elements and arrive at the subject matter of claim 1 without the use of inventive skills.
For the sake of completeness it is pointed out that such strip or microstrip lines are used for the same purpose in D4 (paragraph [0022] and WPI / DERWENT abstract) and in D8 (page 4, lines 24-31; figure 2).
4. Dependent claims 2-12 do not contain any feature which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step, see documents D7 (abstract; Fig. 1-3, 5; page 2, lines 27-35; page 7, line 23 - page 8, line 35; page 8, lines 24-27 and page 9, lines 1-10).

Re Item VII.

- a. The scope of claim 8 is such that it comprises inter alia strip or microstrip lines of substantially zero length. Thus, in contradiction to the independent claims, real strip or microstrip lines are not present at all. As a result the application does not meet the requirements of Article 6 PCT, because claims 1-12 are not clear.
- b. Contrary to the requirements of Rule 6.3(b) PCT, the independent claim is not casted in the two part form.
- c. The background art (D4, D7, D8) useful for understanding the invention is not acknowledged in the description (Rule 5.1(a)(ii) PCT).

Claims

1. An antenna arrangement including:
an antenna element;
5 a load element capacitively coupled to the antenna element; and
a frequency adjusting arrangement for tuning the antenna element,
wherein the frequency adjusting arrangement comprises a switch arranged to
connect one of one or more strip or microstrip lines to the load element.
- 10 2. An antenna arrangement as claimed in claim 1, in which the switch is a
multiple throw switch.
3. An antenna arrangement as claimed in either preceding claim, in which the
load element is a patch.
- 15 4. An antenna arrangement as claimed in any preceding claim, in which the
antenna element is a patch.
5. An antenna arrangement as claimed in any preceding claim, in which the
20 switch is connected to at least two or more strip or microstrip lines.
6. An antenna arrangement as claimed in any preceding claim, in which one of
two or more throws of the switch is connected to a strip or microstrip line of
substantially zero length.
- 25 7. An antenna arrangement as claimed in any preceding claim, in which one of
the strip or microstrip lines, when coupled to the antenna element via the switch,
provides a substantially open circuit at an operating frequency of the antenna
arrangement.
- 30 8. An antenna arrangement as claimed in any preceding claim, in which one of
the strip or microstrip lines, when coupled to the antenna element via the switch,

provides a substantially short-circuit at an operating frequency of the antenna arrangement.

9. An antenna arrangement as claimed in any preceding claim, in which one of
5 the strip or microstrip lines, when coupled to the antenna element via the switch,
provides an impedance between a short and an open circuit at an operating
frequency of the antenna arrangement.

10. An antenna arrangement as claimed in any preceding claim, in which at least
10 one of the strip or microstrip lines is connected to ground at its end opposite to the
switch

11. An antenna arrangement as claimed in any preceding claim, in which at least
one of the strip or microstrip lines is insulated from ground at its end opposite to
15 the switch

12. A radiotelephone including an antenna arrangement as claimed in any
preceding claim.